

Claims

- [c1] A method for retaining oil in germ and other fractions of an oil bearing seed, without damaging pericarp and starch, following fractionation of the oil bearing seed, the method comprising: optionally pretreating the oil bearing seed; and adding the oil-bearing seed with the germ fraction to an isotonic solution, the isotonic solution having an ionic strength effective for retaining oil in the germ and other fractions of the oil bearing seed.
- [c2] The method of claim 1 wherein the isotonic solution comprises fermentable sugar and water.
- [c3] The method of claim 1 wherein the isotonic solution is enclosed in a vessel.
- [c4] The method of claim 3 wherein the germ is separated from the oil bearing seed and is continuously removed from the top of the vessel.
- [c5] The method of claim 4 wherein the remainder of the oil bearing seed is continuously removed from the bottom of the vessel.
- [c6] The method of claim 1 wherein the isotonic solution comprises a recyclable material and water.
- [c7] The method of claim 1 wherein the oil bearing seed is a corn kernel.
- [c8] The method of claim 7 further comprising adding water to the corn kernel prior to pretreatment.
- [c9] The method of claim 8 wherein the pretreatment includes corn milling.
- [c10] The method of claim 9 wherein the milling is performed in a dry mill.

- [c11] The method of claim 1, further comprising recovering oil and protein from the germ after the germ is treated with the isotonic solution.
- [c12] The method of claim 1, further comprising recovering oil from a starch/pericarp complex of the seed.
- [c13] The method of claim 12, further comprising processing the starch/pericarp complex of the seed.
- [c14] A germ separated from an oil bearing seed, the germ retaining substantially all of the oil held by the germ when it was part of the oil bearing seed.
- [c15] A system, comprising: a dry mill; a vessel and an isotonic solution contained in the vessel.
- [c16] The system of claim 12, further comprising a water dispersing device.
- [c17] The system of claim 12 wherein the isotonic solution is a fermentable sugar solution.
- [c18] The system of claim 12 further comprising a fermentation device.
- [c19] The system of claim 15 wherein the isotonic solution is recyclable within the fermentation device.
- [c20] The system of claim 12 further comprising a device for shearing particles.
- [c21] A method for separating a pericarp/starch fraction from a seed comprising: milling the seed to make a milled corn kernel; and separating the germ fraction from the milled corn kernel by adding the kernel and germ fraction to an isotonic solution wherein the germ

fraction retains substantially all of its oil and rises to the top of the solution and the remaining milled corn kernel sinks to the bottom of the solution.

- [c22] The method of claim 21 wherein the isotonic solution comprises fermentable sugar and water.
- [c23] The method of claim 21 wherein the isotonic solution is enclosed in a vessel.
- [c24] The method of claim 23 wherein the germ is continuously removed from the top of the vessel.
- [c25] The method of claim 23 wherein the remainder of the seed is continuously removed from the bottom of the vessel.